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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/628,129	07/24/2003	David Ruzic	10559-840001/P16715	3090
20985	7590	08/14/2006	EXAMINER	
FISH & RICHARDSON, PC P.O. BOX 1022 MINNEAPOLIS, MN 55440-1022			KORNAKOV, MICHAEL	
			ART UNIT	PAPER NUMBER

1746

DATE MAILED: 08/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/628,129	<b>Applicant(s)</b> RUZIC ET AL.	
	<b>Examiner</b> Mikhail Kornakov	<b>Art Unit</b> 1746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 May 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) 22-29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 and 30-36 is/are rejected.
- 7) ☒ Claim(s) 9 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election without traverse of claims 1-21, 30-36 in the reply filed on 05/30/2006 is acknowledged. Claims 22-29 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Claims 1-21, 30-36 are currently examined on the merits.

### ***Specification***

2. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Claim 9 recites "a power source to produce a potential difference between neighboring metal foil elements in the contaminant trap", which apparently is not disclosed in the instant specification and therefore appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-21, 30-36 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. The recited in claim 1 “a plasma generating device to prevent matter from reaching the one or more collector optics” or in claim 30 “a plasma generating device to effect removal of matter from reaching the one or more collector optics” constitutes indefinite subject matters since apparently a plasma generating device is utilized for producing light and a contaminant trap is designated to prevent matter from reaching the one or more collector optics or to effect removal of matter.

6. The limitation of claim 30 reciting “a plasma generating device **to effect removal of matter from reaching the one or more collector optics**” is indefinite as per metes and bounds of such are not readily ascertainable.

7. Claim 33 is indefinite since it is not clear whether a plasma generating device to ionize debris in light chamber is also used for producing a light or a separate plasma device for producing a light is utilized. Appropriate clarifications are required.

8. Claims 5, 10 are indefinite since they recite the limitation “the coil”. There is insufficient antecedent basis for this limitation in claims.

9. The recited in claim 20 “a second coil” constitutes an indefinite subject matter, because a first coil is not defined and therefore it is not clear what Applicants regard as “a second coil”. For examination purposes the second coil is understood as the coil adapted to ionize debris particles.

10. Claims 2-9, 11-21, 31,32,34-36 are rejected because of their dependency and failure to remove the ambiguity of parent claims.

***Claim Rejections - 35 USC § 102***

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

12. Claims 1, 2, 30, 31, 33, 34 rejected under 35 U.S.C. 102(a) as being anticipated by Visser (U.S. 6,753,941).

Visser teaches a lithographic apparatus comprising a chamber for producing EUV light by plasma source; collecting mirrors (optics); a contaminant trap made of metal foil and positioned between the light source and the optics; an image processing (lithography) chamber (Fig. 1-3; col.5, lines 48-67; col. 6, lines 43-52; col.7, lines 1-10, 48-54; col. 8, lines 1-10, 15-23, 26-36). Therefore, all the structural elements of the instant claims are met by Visser.

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13. Claims 1-3, 7, 13-16, 20-21, 30-35 are rejected under 35 U.S.C. 102(a) as being anticipated by Melnychuk et al (U.S. 6,972,421).

Melnychuk teaches EUV producing apparatus utilized in the lithography system, comprising a plasma device for producing EUV light source, collector mirrors (optics), a contaminant trap; electrodes, comprising tungsten coated with another material; antenna, placed inside the electrode (anode); a coil to ionize debris (the disclosure of Melnychuk and specifically col. 23; col. 24; col. 25, lines 9-34; col. 31, lines 50-52; col. 36, lines 29-48; col. 48, lines 21-47; Fig. 15, 27, 28). Therefore, all the structural elements of the instant claims are met by Melnychuk.

### ***Claim Rejections - 35 USC § 103***

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

16. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

17. Claims 7, 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Visser (U.S. 6,753,941).

Regarding claims 7 and 8, Vesser teaches trapping contaminant particles by charging the walls of the trap (col.7, lines 53-55), and therefore the electromagnetic field for such charging and a device for creating such electromagnetic field are clearly suggested by Visser.

18. Claims 3, 4, 10, 11, 12, 32, 35, 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Visser (U.S. 6,753,941) in view of Turner (U.S. 5,194,731).

While teaching EUV emitting plasma source, Visser remains silent about particularities of plasma generation source (device), as instantly claimed. However, the instantly recited structural elements of the plasma generating device, such as antenna/RF coils/RF power supply are commonly utilized in the art for producing UV light from plasma, which is indicated, for example, by Turner (col5, lines 39-55) and

therefore one skilled in the art would have found obvious to use such structural elements for creating EUV emitting plasma source within the teaching of Visser.

As to claim 12, reciting the use of direct current (DC) power, it is noted here that RF or DC power sources are equally utilized in the art for producing plasma UV light and the use of RF or DC power sources would be obvious within the teaching of Visser.

19. Claims 5, 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Visser (U.S. 6,753,941) in view of Turner (U.S. 5,194,731) and in further view of Savas et al (U.S. 5,811,022).

Visser/Turner remain silent means for minimizing sputtering of the coil, such as Faraday shield. However, the Faraday shield is commonly utilized in coil containing plasma devices in order to reduce capacitive coupling and minimize electric current flux and therefore, one skilled in the art would have found obvious to utilize Faraday shield for the same reasons in the teaching of Visser/Turner.

20. Claims 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Visser (U.S. 6,753,941) in view of Kandaka et al (U.S. 6,590,959).

While teaching EUV emitting plasma source, Visser remains silent about particularities of plasma generation source (device), and particularly about electrodes comprising tungsten. However, electrodes are conventionally utilized producing UV light from plasma, which is indicated, for example, by Kandaka (Fig. 1; paragraph, bridging col.6 and 7). Therefore, one skilled in the art motivated by Kandaka would have found



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obvious to utilize the tungsten comprising electrodes of Kondaka for generating plasma and UV light in the teaching of Visser with the reasonable expectation of success.

21. Claims 14-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Visser (U.S. 6,753,941) in view of Kandaka et al (U.S. 6,590,959) and in further view of Wester (U.S. 6,762,424).

Visser/Kandaka remain silent about coating the tungsten containing electrode with a second material, as instantly claimed. However, such coating is known in the art. Thus, Wester teaches photolithography tool comprising tungsten electrode coated with cesium oxide to enhance resistance of the electrode to chemical/mechanical erosion. Therefore, one skilled in the art motivated by Wester would have found obvious to utilize tungsten coated cesium oxide electrode in order to enhance resistance of tungsten electrode to chemical erosion in the teaching of Visser/Kandaka.

### ***Allowable Subject Matter***

22. Claim 9 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

23. The following is a statement of reasons for the indication of allowable subject matter: No prior art that anticipates or suggests fairly the apparatus with combination of structural elements as instantly claimed has been located as of the date of this Office Action.

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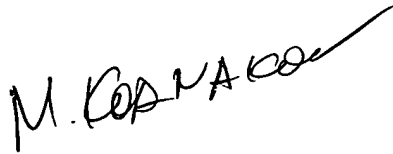
24. It is noted that the instant claims are directed to the following patentably distinct species: the specie of apparatus with inductively coupled plasma, having antenna and coils, as per the instant claims 3-12, 20,21 and the specie of apparatus with electrodes as per claims 13-19. The species are independent or distinct because they recite apparatuses with different plasma coupling. The election of species requirement is not made at this time, however it may be imposed later if claims are amended to introduce additional structural limitations into the each group of species.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mikhail Kornakov whose telephone number is (571) 272-1303. The examiner can normally be reached on 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on (571) 272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in black ink, appearing to read "M. Kornakov", with a long, sweeping horizontal stroke extending to the right.

Mikhail Kornakov  
Primary Examiner  
Art Unit 1746

07/29/2006